

CLAIMS

1. A compressor comprising:

a cylinder block which has a cylinder bore to accommodate a piston;

5 a crank chamber which is provided at one end of the cylinder block;

a suction chamber and a discharge chamber that are provided at the other end of the cylinder block;

a valve that is provided between the cylinder bore and the suction chamber and between the cylinder bore and the discharge chamber;

10 a valve plate provided with the valve and having a suction hole to communicate between the cylinder bore and the suction chamber and a discharge hole to communicate between the cylinder bore and the discharge chamber;

a suction valve provided with the valve and assemble to the side of the cylinder bore of the valve plate, and the suction valve is comprised of a flexible plate to be able to open and close the suction hole;

15 a drive shaft that is rotatably and axially supported within the crank chamber to reciprocally actuate the piston; and

a valve structure in which the suction valve is formed with a suction valve main body, and an opposing part that is integrally formed on the suction valve main body, and faces the suction hole and a valve seat at the opening edge of the suction hole so as to be able to open and close the suction hole, and clearance forming means, which forms a predetermined clearance between the opposing part and the valve seat by isolating the opposing part from the valve seat by a predetermined distance, is formed on at least one of the valve plate and the suction valve.

2. The compressor according to claim 1, wherein
the clearance forming means comprises a coating layer having a
predetermined thickness coated on at least one of the valve plate main body
excluding the valve seat at the opening edge of the suction hole and the suction main
5 body.
3. The compressor according to claim 1, wherein
the clearance forming means comprises a convex portion that is provided at
a predetermined peripheral position of the valve seat of the suction hole of the valve
10 plate, and that isolates the opposing part from the opening and the opening edge by a
predetermined distance.
4. The compressor according to claim 1, wherein
the clearance forming means comprises a sheet member formed with an
15 elastic member that is disposed between the valve plate main body of the valve plate
and the suction valve main body of the suction valve.
5. The compressor according to claim 1, wherein
the clearance forming means comprises a concave portion provided by
20 having a range where at the edge of the suction hole of the valve plate including the
valve seat and is formed thinner than the other valve plate main body,
and wherein an outer edge step of a groove provided around the valve seat
is chamfered or rounded.
- 25 6. The compressor according to claim 1, wherein

the clearance forming means comprises a concave portion provided by having a range where at the edge of the suction hole of the valve plate including the valve seat and is formed thinner than the other valve plate main body,

and wherein a groove is provided around the valve seat, and width of the
5 groove of a one part is bigger than the width of other parts of the groove.

7. The compressor according to claim 5 or 6, wherein
the upper surface of the valve seat is chamfered or rounded.

10 8. A compressor comprising:
a cylinder block that has a cylinder bore to accommodate a piston;
a suction chamber and a discharge chamber that are provided in the cylinder
block;

a valve that is provided between the cylinder bore and the suction chamber
15 and between the cylinder bore and the discharge chamber;

a valve plate provided with the valve and having a suction hole to
communicate between the cylinder bore and the suction chamber and a discharge
hole to communicate between the cylinder bore and the discharge chamber; and

a suction valve provided with the valve and assemble to the side of the
20 cylinder bore of the valve plate, and the suction valve is comprised of a flexible
plate to be able to open and close the suction hole; and

a valve structure in which the suction valve is formed with a suction valve
main body, and an opposing part that is integrally formed on the suction valve main
body, and faces the suction hole and a valve seat at the opening edge of the suction
25 hole so as to be able to open and close the suction hole, and clearance forming

means, which forms a predetermined clearance between the opposing part and the valve seat by isolating the opposing part from the valve seat by a predetermined distance, is formed on at least one of the valve plate and the suction valve.

AMENDED CLAIMS

[received by the International Bureau on 25 February 2005 (25.02.2005);
original claims 3, 4, and 8 cancelled; original claims 1 and 5 amended;
new claims 9 and 10 added; remaining claims unchanged (5 pages)]

1. (Amended) A compressor comprising:

- 5 a cylinder block which has a cylinder bore to accommodate a piston;
a crank chamber which is provided at one end of the cylinder block;
a suction chamber and a discharge chamber that are provided at the other
end of the cylinder block;
a valve that is provided between the cylinder bore and the suction chamber
10 and between the cylinder bore and the discharge chamber;
a valve plate provided with the valve and having a suction hole to
communicate between the cylinder bore and the suction chamber and a discharge
hole to communicate between the cylinder bore and the discharge chamber;
a suction valve provided with the valve and assemble to the side of the
15 cylinder bore of the valve plate, and the suction valve is comprised of a flexible
plate to be able to open and close the suction hole;
a drive shaft that is rotatably and axially supported within the crank
chamber to reciprocally actuate the piston; and
a valve structure in which the suction valve is formed with a suction valve
20 main body, and an opposing part that is integrally formed on the suction valve main
body, and faces the suction hole and a valve seat at the opening edge of the suction
hole so as to be able to open and close the suction hole, and clearance forming
means, which forms a predetermined clearance between the opposing part and the
valve seat by isolating the opposing part from the valve seat by a predetermined
25 distance, is formed on at least one of the valve plate and the suction valve, wherein

there is no gap in the valve structure except for the opposing part.

2. The compressor according to claim 1, wherein

the clearance forming means comprises a coating layer having a predetermined thickness coated on at least one of the valve plate main body

5 excluding the valve seat at the opening edge of the suction hole and the suction main body.

3. (Cancelled)

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4. (Cancelled)

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5. (Amended) The compressor according to claim 1, wherein

the clearance forming means comprises a concave portion provided by

20 having a range where at the edge of the suction hole of the valve plate including the valve seat and is formed thinner than the other valve plate main body,

and wherein a groove formed thinner than the valve seat is provided in periphery of the valve seat so that the groove surrounds the suction hole.

25 6. The compressor according to claim 1, wherein

the clearance forming means comprises a concave portion provided by having a range where at the edge of the suction hole of the valve plate including the valve seat and is formed thinner than the other valve plate main body,

and wherein a groove is provided around the valve seat, and width of the
5 groove of a one part is bigger than the width of other parts of the groove.

7. The compressor according to claim 5 or 6, wherein
the upper surface of the valve seat is chamfered or rounded.

10 8. (Cancelled)

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9. (Added) The compressor according to claim 5, wherein an outer edge step of the groove is chamfered or rounded.
10. (Added) The compressor according to claim 1, wherein the clearance forming means is comprised of a groove formed in the suction valve.